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Paul Haahr

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EXAMINER

PYO, MONICA M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/668,721	Applicant(s) HAAHR ET AL.	
	Examiner MONICA M. PYO	Art Unit 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 79-117 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 79-117 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in responsive to the Amendment filed 1/18/2008.
2. Claims 79-117 are currently pending in this application. Claims 79, 94-96, 111, 112, 116 and 117 are independent claims. In the Amendment filed 1/18/2008, claims 79, 80, 94, 95, 96 and 111-112 are amended. Claims 79-117 are rejected. This action is made Final.

Claim Rejections - 35 USC § 112

3. The claim amendment received on 1/18/2008. The changes are acknowledged and accepted. Therefore, the 35 U.S.C. 112, 1st paragraph rejections made in a prior Office Action are withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 79-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,026,388 issued to Liddy et al. (hereinafter Liddy) in view U.S. Patent No. 6,823,333 issued to McGreevy (hereinafter McGreevy).

Regarding claims 79, 94 and 95, Liddy disclose a method comprising:

A). storing search query (i.e., a user's query text)-search document (i.e., discrete texts from documents) association in a database, each search query-search document association representing an issued search query and a search document, as a database with

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matching documents and queries, and as a “Document Database and Associated Data” (Liddy: col. 7, lns. 14-51);

B). receiving a search query, as a user entering queries (Liddy: col. 7, lns. 44-51) ;

C). identifying a set of search result documents using the received search query, as a set of documents retrieved in response to a search query (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64); **and**

D). suggestion based on at least one of the search result documents and at least one search query-search document association in the database, as the user improves on an initial query representation by re-expressing the query based on the basis of such documents being of particular relevance (Liddy: col. 3, lns. 1-14; col. 8, lns. 13-40; col. 9, lns. 19-33).

Although Liddy discloses the refinement method (Liddy: col. 8, lns. 12-47), Liddy does not explicitly disclose:

A). a one-to-one paring of;

D). formulating a search query refinement.

However, McGreevy discloses:

A). a one-to-one paring of, as a key term pairs representing each document and internal query (McGreevy: col. 18, lns. 58-67; col. 29, lns. 9-21; col. 29, lns. 64-col. 30, lns. 3);

D). formulating a search query refinement, as a query formulation and refinement (McGreevy: col. 51, lns. 51-67).

It would have been obvious to a person with ordinary skill in the art at the time of invention to modify the teachings of Liddy with the teachings of McGreevy to utilize the key

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term pairings and the search term refinements in a database search system to enhance the method to identify the most relevant subset of outputs (McGreevy: col. 4, lns. 38-47).

Regarding claim 80, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion comprises:

identifying search documents of the search query-search document association (i.e., document-query matching) that match the at least one search result document within the database (Liddy: col. 8, lns. 13-47; col. 9, lns. 19-33); and

using the issue search queries associated with the identified search documents in the formulating (Liddy: col. 8, lns. 13-40) and (McGreevy: col. 51, lns. 51-67).

Regarding claim 81, Liddy and McGreevy disclose the method further comprising:

assigning weights to the search query-search document association in the database based on relevancies of the search documents to the issued search queries in the search query-search document association (Liddy: col. 7, lns. 14-51; col. 12, lns. 1-20; col. 20, lns. 48-col. 21, lns. 12); and

storing the weights in the database (Liddy: col. 20, lns. 48-col. 21, lns. 1).

Regarding claims 82 and 99, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

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computing term vectors using terms in the issued search queries of the search query-search document associations and the assigned weights (Liddy: col. 7, lns. 14-51; col. 25, lns. 14-20).

Regarding claims 83 and 100, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

normalizing the term vectors (Liddy: col. 23, lns. 21-23); and

forming clusters of the identified search documents based on distances of each of the normalized term vectors from a common origin (Liddy: col. 23, lns. 20-28; col. 25, lns. 34-45; col. 26, lns. 3-9).

Regarding claims 84 and 101, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

multiplying, by a constant, those of the normalized term vectors that include constituent terms with the received search query to downwardly weight the constituent terms to produce an independence of the clusters from the terms of the received search query (McGreevy: col. 17, lns. 25-36; col. 33, lns. 18-25).

Regarding claims 85 and 102, Liddy and McGreevy disclose the method further comprising:

assigning a relevance score to the at least one search result document (Liddy: col. 12, lns. 1-10 and 15-20),

wherein the formulating the search query refinement suggestion further includes (Liddy: col. 7, lns. 57-64) and (McGreevy: col. 51, lns. 51-67):
ranking the clusters based on the relevance score and a number of identified search documents in the clusters (Liddy: col. 26, lns. 3-9 and 14-26).

Regarding claims 86 and 103, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

selecting ones of the clusters based on the ranking (Liddy: col. 28, lns. 27-36).

Regarding claims 87 and 104, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

computing a centroid for each of the selected clusters (Liddy: col. 25, lns. 34-45); and
determining a score for each unique search query in the selected clusters based on the centroids (Liddy: col. 25, lns. 34-45; col. 26, lns. 14-26).

Regarding claims 88 and 105, Liddy and McGreevy disclose the method wherein the computing the score for each of the unique search queries comprises:

multiplying a frequency of the issued search queries in the search query-search document associations in the selected clusters times a length of a distance vector measured from the term vectors of the issued search queries in the search query-search document associations to the centroids of the selected clusters (Liddy: col. 23, lns. 20-28; col. 25, lns. 34-45) and (McGreevy:

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col. 17, lns. 25-36; col. 33, lns. 18-25).

Regarding claims 89 and 106, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

designating a name to each of the selected clusters based on the computed scores of the unique search queries of the selected clusters (Liddy: col. 25, lns. 30-37).

Regarding claims 90 and 107, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

comparing the computed scores of the unique search queries of the named clusters to a threshold (Liddy: col. 7, lns. 44-51; col. 15, lns. 11-17); and

selecting those cluster names that exceed the threshold to obtain the search query refinement suggestions (Liddy: col. 28, lns. 27-38) and (McGreevy: col. 16, lns. 1-12).

Regarding claims 91 and 108, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

sorting the obtained search query refinement suggestions based on a relevance score assigned to each of the search result documents corresponding to the identified search documents associated with the named clusters and a number of the identified search documents in the named clusters (Liddy: col. 12, lns. 1-10 and 15-20; col. 33, lns. 45-50 and 55-61).

Regarding claims 92 and 109, Liddy and McGreevy disclose the method further comprising:

presenting the sorted search query refinement suggestions to a user (Liddy: col. 7, lns. 57-64).

Regarding claims 93 and 110, disclose the method further comprising:
augmenting the sorted set of search query refinement suggestions with supplemental queries that include one or more of the terms of the search query and negated forms of all terms appearing in the set of search query refinement suggestions, but not appearing in the search query (Liddy: col. 7, lns. 44-51 and 57-64) and (McGreevy: col. 51, lns. 51-67); and
presenting the augmented search query refinement suggestions to a user (Liddy: col. 7, lns. 57-64; col. 8, lns. 18-28).

Regarding claims 96 and 111, these claims are also rejected based upon the same reasoning as claims 79, 94 and 95. Additionally, Liddy and McGreevy disclose:

identifying the search result documents to stored search documents, as a subset of documents from a document database (Liddy: col. 5, lns. 22-28; col. 8, lns. 29-40);

identifying, for each of the stored search documents that matches one of the search result documents, a query-document association (i.e., document-query matching) **in the plurality of query-document associations**, as a match between a query and a document (Liddy: col. 8, lns. 13-47; col. 9, lns. 19-33); **and**

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It would have been obvious to a person with ordinary skill in the art at the time of invention to modify the teachings of Liddy with the teachings of McGreevy to utilize the key term pairings and the search term refinements in a database search system to enhance the method to identify the most relevant subset of outputs (McGreevy: col. 4, lns. 38-47).

Regarding claim 97, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion comprises:

using the issued search queries associated with the identified query-document associations in the formulating (Liddy: col. 7, lns. 14-51).

Regarding claim 98, Liddy and McGreevy disclose the method further comprising:
assigning weights to the stored query-document associations based on relevancies of the search documents to the issued search queries in the query-document associations; and
storing the assigned weights (Liddy: col. 12, lns. 1-20; col. 20, lns. 48-col. 21, lns. 12).

Regarding claims 112, 116 and 117, Liddy discloses a method comprising:

A). creating a query source reference, including, as a collection of various representations which the system produces for each document or for each query (Liddy: col. 7, lns. 14-41);

B). identifying associations between issued search queries and retrieved search documents, as a database with matching documents and queries, and as a “Document Database and Associated Data” (Liddy: col. 7, lns. 14-51), **and**

- C). assigning a weight to each of the associations,** as a matching algorithm weight and a weight assignment on a portion of query (Liddy: col. 12, lns. 1-20; col. 20, lns. 48-col. 21, lns. 12);
- D). receiving a search query,** as a user entering queries (Liddy: col. 7, lns. 44-51);
- and**
- E). suggestion for the received search query using the query source reference,** as a match between a query and a document (Liddy: col. 3, lns. 1-14; col. 8, lns. 13-40).

Although Liddy discloses the refinement method (Liddy: col. 8, lns. 12-47), Liddy does not explicitly disclose:

- B). in a one-to-one relation;**
- E). formulating a refinement.**

However, McGreevy discloses:

- B). in a one-to-one relation,** as a key term pairs representing each document and internal query (McGreevy: col. 18, lns. 58-67; col. 29, lns. 9-21; col. 29, lns. 64-col. 30, lns. 3);
- E). formulating a refinement,** as a query formulation and refinement (McGreevy: col. 51, lns. 51-67).

It would have been obvious to a person with ordinary skill in the art at the time of invention to modify the teachings of Liddy with the teachings of McGreevy to utilize the key term pairings and the search term refinements in a database search system to enhance the method to identify the most relevant subset of outputs (McGreevy: col. 4, lns. 38-47).

Regarding claim 113, Liddy and McGreevy disclose the method further comprising:

obtaining at least one search result document using the received search query (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64),

wherein the formulating the search query refinement suggestion further comprises (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64) and (McGreevy: col. 51, lns. 51-67):

comparing the at least one search result document to the retrieved search documents (Liddy: col. 5, lns. 22-28; col. 8, lns. 29-40),

identifying the retrieved search documents that match the at least one search result document (Liddy: col. 8, lns. 13-47), and

using the issued search queries associated with the identified search documents in the formulating (Liddy: col. 8, lns. 13-40) and (McGreevy: col. 51, lns. 51-67).

Regarding claim 115, Liddy and McGreevy disclose the method wherein the formulating the search query refinement suggestion further comprises:

ranking the search query refinement suggestion based on the computed term vectors (Liddy: col. 26, lns. 3-9 and 14-26),

wherein the method further comprises:

presenting the ranked search query refinement suggestion to a user (Liddy: col. 7, lns. 57

64; col. 8, lns. 18-28).

Response to Arguments

6. Applicant's arguments filed 1/18/2008 have been fully considered but they are not persuasive.

Regarding claim 79, applicant's representative argues that Liddy in view of McGreevy do not disclose the feature of "formulating a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in the database." More specifically, applicant's representative argues that Liddy teaches "a search query refinement suggestion by matching documents and queries at the lexical, syntactic, semantic, and discourse levels" but Liddy does not disclose the feature of "a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document." However, the Examiner disagrees. Liddy clearly discloses in column 3, lines 1-14 that the user improves on an initial query representation by re-expressing the query <i.e., query refinement> based on the basis of such documents being of particular relevance. Additionally, Liddy discloses in column 8, lines 13-40 and in column 9, lines 19-33 that the identification process occurs at the sentence, paragraph and discourse levels and is a fundamental precursor to later natural language processing and document-query matching. Thus, the fact that the system of Liddy may be more sophisticated than that of the present invention is irrelevant.

Regarding claim 112, applicant's representative argues that Liddy in view of McGreevy do not disclose the feature of "formulating a refinement suggestion for a received search query

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using a created query source reference, where the creating including identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the association." However, the Examiner disagrees. Liddy discloses in column 7, lines 14-41 that the system generates both conceptual and term based representations of the documents and queries. Furthermore, Liddy discloses that the system refer to this collection of various representations <i.e., source reference> which the system produces for each document or for each query. As explained above, Liddy teaches the feature of query refinement in column 3, lines 1-14. Liddy further discloses in column 8, lines 13-40 and in column 9, lines 19-33 that the identification process occurs at the sentence, paragraph and discourse levels and is a fundamental precursor to later natural language processing and document-query matching. In view of these teachings, it is perfectly valid to say that this teaching of Liddy read on the claimed limitation of "formulating a refinement suggestion for a received search query using a created query source reference." Therefore, Liddy in view McGreevy disclose what has been claimed as explained above. It should be noted that **a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art**, including nonpreferred embodiments. See MPEP 2123 [R-5] (I).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONICA M. PYO whose telephone number is (571)272-8192. The examiner can normally be reached on Mon & Thur 7:00 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica M Pyo
Examiner
Art Unit 2161

mpyo
5/8/2009

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